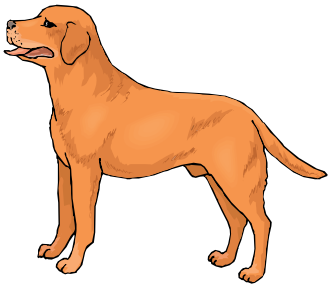
Rabies Control in Indiana



GUIDELINES FOR HANDLING PEOPLE AND ANIMALS

Rabies is a deadly disease caused by a virus that can infect humans, pets, livestock and wildlife. Preventing the disease in animals provides the best means of protection to humans.

Under Indiana law, all dogs, cats and ferrets older than 3 months of age must be vaccinated against the rabies virus. State law allows the use of 1-year and 3-year vaccines according to approved label directions. (NOTE: Some localities throughout the state may have stricter local laws.) The vaccine must be administered by a licensed and accredited veterinarian only.

Animals entering Indiana must have received a vaccination within the previous 12 months, regardless of vaccine type.

Written and compiled through the cooperation of the following agencies:

BOAH

INDIANA STATE
BOARD OF ANIMAL HEALTH

INDIANA VETERINARY MEDICAL ASSOCIATION

Indiana State Department of Health

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RABIES GUIDELINES BOOK

It is with a great deal of pleasure that we are able to bring to concerned individuals a guidebook to deal with handling people, animals and specimens with regards to animal bites and the risk of rabies. These situations bring up many questions and it is hoped that this book will provide answers for handling those involved. With the outbreak of rabies in raccoons in the East, skunks in the West and coyotes, dogs and foxes of Texas, Indiana can potentially become part of one of these epidemics. With the proper preparation and public education, it is hoped that the impact of such an epidemic will be less severe.

The Companion Animal Committee is composed of members of the Indiana Veterinary Medical Association (IVMA), Indiana State Board of Animal Health (BOAH), Indiana State Department of Health (ISDH), Indiana Association of Animal Control Personnel (IAACP), and Purdue University School of Veterinary Medicine (PUSVM)/Cooperative Extension. Through the efforts of these people and using guidelines published by other state involved in the outbreaks, it is hoped that this will remain an important item on your bookshelf which will be updated periodically as information and situations change. The book itself is in a three ring binder so pages can be added and removed easily.

The following outlines each section:
Section 1: Introduction—This includes an explanation for the manual and a simple diagram that explains how rabies is transmitted and spread through wildlife to other species.
Section 2: Telephone List—Here are important phone numbers regarding animal bite situations and sources of information. Notice there are blank lines to fill in local phone numbers of local agencies that handle many of these situations. Please put the appropriate numbers in these blanks for easy reference.
Section 3: Animal to Human Bite Procedures—This section explains about the handling of these situations and a little about the rabies virus and disease transmission. The last sheet is a flow chart to follow for identification of specific procedures to follow in various situations.
Section 4: Animal to Animal Bite Procedures—This section has a flow chart to handle both vaccinated and unvacci-
□
used at home are included.
Section 5: Submission of Samples—This section includes instructions for sending in head and brain samples as well as the ISDH submission form, which can be copied and used for each sample submitted.
Section 6: Maps and Directions to Laboratories—Included in this section is the map to the Rabies Laboratory at ISDH. Directions to the Diagnostic Laboratories at Purdue and in Southern Indiana are also here. They can submit the appropriate sample from animals being examined for other reasons or help remove a brain for tissue sampling.
Section 7: This section is vacant for a reason—In the face of an outbreak or epidemic, it will be necessary to institute special guidelines for emergency situations. Each book holder will be sent these new rules at the appropriate time to put in this section.
Section 8: Appendix—This contains the Indiana Administrative Code regarding the vaccination of animals and rabies control (BOAH), and the reporting and investigating of animal bites to humans (ISDH). The Compendium on Animal Rabies Control, which is incorporated as part of Indiana law, is included and will be updated every year. Finally, the most recent immunization practices recommended by the CDC are also included. This document is only revised when significant changes are made in this policy. There is one addendum regarding bat rabies that is included at the end.

It is hoped that this book will serve as an excellent reference for all recipients and that local ordinances can be included as well as other forms in the side pockets and back of the book. Please feel free to direct any suggestions to any member of the committee and *make sure you return the receipt form* so that future updates are directed to the appropriate person.

Thank you for your time and attention.

Sincerely,
The Companion Animal Committee of the Board of Animal Health (317/227-0320)

Dr. Maxine Ray, Chairperson
Dr. Alan Beck, Purdue SVM
Ms. Belinda Lewis, IAACP
Dr. Carol Ecker, IVMA
Dr. Larry Glickman, Purdue SVM
Dr. Sebastian Heath, Purdue SVM
Dr. Norman Long, State Youth 4-H
Dr. Lawrence McAfee, BOAH
Dr. Bret Marsh, State Veterinarian
Lt. Spencer Moore, IAACP
Dr. Sandra K.L. Norman, BOAH
Dr. Gary Patronek, Tufts University
Dr. John Scamahorn, IVMA
Mr. Tom Prendergast, Marion Cty DOH
Dr. Leonardo Siger, Purdue SVM
Dr. Robert Teclaw, ISDH
Dr. Leon Thacker, Purdue SVM/ADDL
Dr. Randy White, Purdue SVM/ADDL

INTRODUCTION

This manual is prompted by the spread of terrestrial rabies up the Eastern Seaboard and through the Mid-Atlantic region. In Indiana, we have not seen the influx of positive rabies cases that these eastern states have, but we know that the primary vector has been raccoons. It is anticipated as the virus moves its way west, our own population of both wild and domestic animals will be affected. In addition to this concern, we presently find several bats to be rabies-positive and bats serve as the number one source of rabies infection for humans.

In the absence of terrestrial rabies, but with it as close as the Ohio-Pennsylvania boarder, we publish these guidelines to help veterinarians, animal control personnel, physicians and animal handlers to identify situations and actions necessary to be taken in order to control and contain the spread of this disease among our animal population. This in turn protects our human population from exposure and infection, minimizing the amount of treatment necessary following exposure to potentially rabid animals.

We would like to thank the states of New Jersey, New York and Connecticut for allowing us to use information from their rabies manuals which were written to deal with the epizootic in the Mid-Atlantic states. With good information and education provided to all enforcing agencies, veterinarians and the general public, we can hopefully minimize human exposure and protect our domestic animals from this deadly disease.

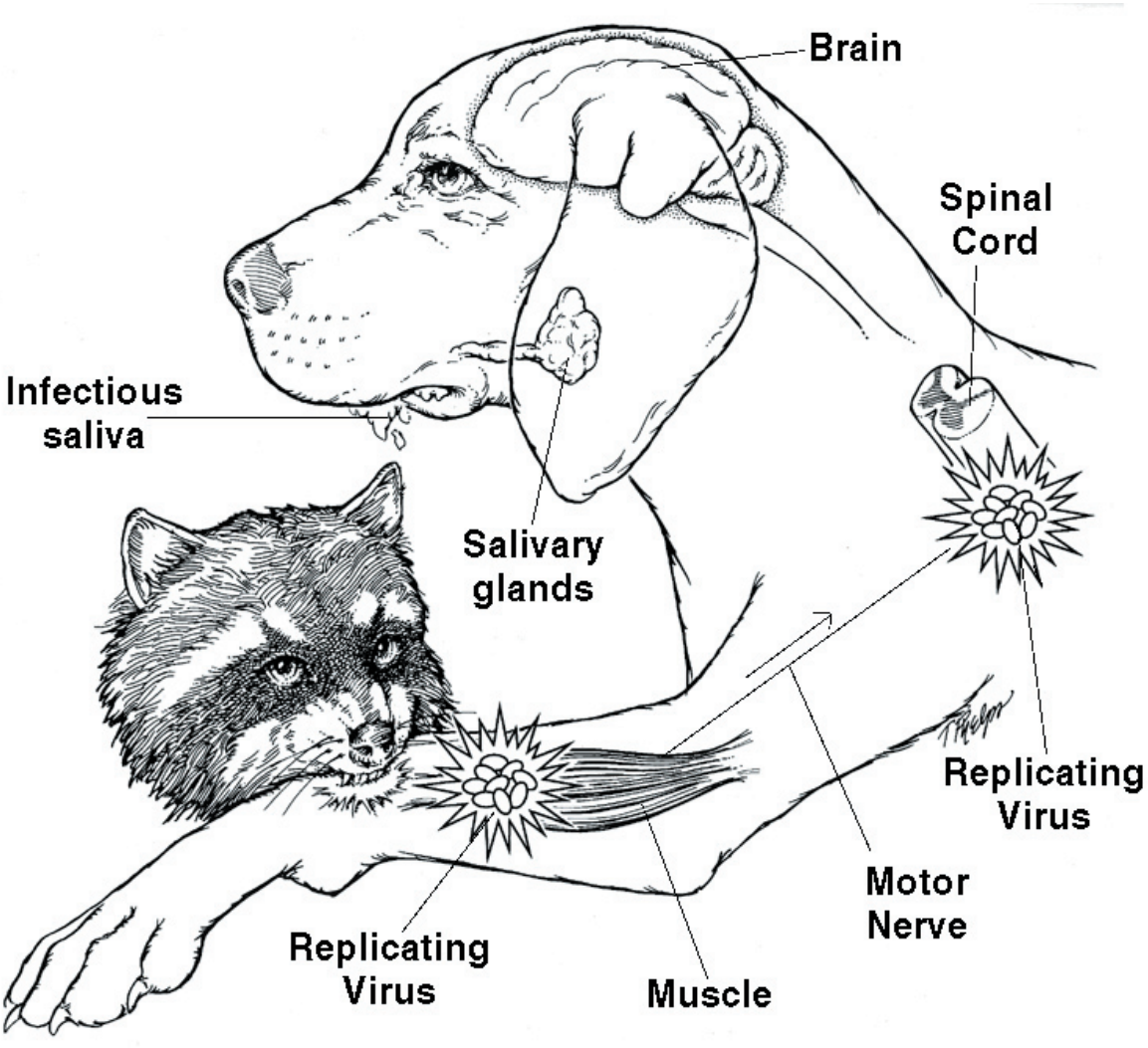
THE INS AND OUTS OF RABIES

1—Rabies virus usually enters the dog's body through a bite wound inflicted by an infected animal and then replicates in muscle cells near the entry point.

2—Over a period of days or weeks, the virus spreads to *motor nerves* (which regulate movement of skeletal muscles) and then heads for the central nervous system. (Post exposure rabies vaccinations are effective only if administered *before* the virus reaches nerve cells.)

3—The virus replicates further in spinal cord nerve cells and then spreads throughout the nervous system causing progressive paralysis and eventually leading to coma and death. When the virus enters the brain, the notorious "mad dog" behavior begins.

4—If and when the virus reaches the *salivary glands* (often at about the time the central nervous system), it can be transmitted to other animals.



WHO TO CALL IF AN ANIMAL HAS BITTEN A PERSON OR ANOTHER ANIMAL

HUMAN EXPOSURE: Questions involving human exposures. Calls should first be directed to your:

LOCAL DEPARTMENT OF HEALTH _____

INDIANA STATE DEPARTMENT OF HEALTH (ISDH)
2 N. Meridian Street
Indianapolis, IN 46204
Information (ISDH) 317/233-1325

Veterinary Epidemiologist 317/233-7272

DEPARTMENT OF NATURAL RESOURCES
If you have a question about wildlife or nuisance animals
Enforcement division 317/232-4010

ANIMAL EXPOSURE:

INDIANA STATE BOARD OF ANIMAL HEALTH
805 Beachway Dr., Suite 50 (BOAH)
Indianapolis, IN 46224
•Questions concerning livestock and domestic animal exposures as well as handling animals and samples
State Veterinarian 317/227-0300
Companion Animal/Equine division 317/227-0320

INDIANA VETERINARY MEDICAL ASSOCIATION
General information on rabies 317/974-0888

SUBMISSION OF SAMPLES:
STATE RABIES LABORATORY (Indianapolis, ISDH) 317/383-6242
This is the *only* laboratory approved for rabies testing. See submission section for sample guidelines

ANIMAL DISEASE DIAGNOSTIC LABORATORY (Purdue) 765/494-7440
ADDL-SOUTHERN INDIANA-SIPAC (Dubois) 812/678-3401
If the animal is being examined for other diseases, ADDL can forward the appropriate sample to the State Rabies lab. Questions concerning livestock and domestic animal exposure

LOCAL ANIMAL CONTROL OFFICIAL _____

LOCAL POLICE OR SHERIFF DEPARTMENT _____

STATE POLICE POST _____

ANIMAL BITES OF HUMANS

INVESTIGATION

All human animal bite wounds must be investigated in Indiana. The investigation should include, at a minimum, sufficient information to complete the **Animal Bite Report—Report of Rabies Prophylaxis**. In general, data on the biting animal, the victim, the circumstances of the bite, the name of the animal's owner (if any), and the rabies vaccination status of the biting animal should be collected. The circumstances of the bite are especially important for determining if the bite was provoked. Provoked bites are considered to be of lower rabies risk, all things being equal, than an unprovoked bite.

CONTROL MEASURES AND PREVENTION

The most effective way to reduce the number of animal bites is to pass and enforce animal control laws and to educate the public and especially children, about potentially high risk situations. Interactions with unfamiliar pets, rough treatment of or threatening behavior toward any animal and contact with wild animals should be avoided in order to reduce bite incidents.

SIGNS AND SYMPTOMS

Most animal bite wounds that come to the attention of medical and/or public health practitioner's will consist of puncture wounds, scratches and abrasions. Severe attacks may produce crushing injuries to bones, especially in children.

TREATMENT

More than 30 species of bacteria and at least one virus have been isolated from dog or cat wounds. Most of these organisms are part of the normal flora of animal mouths. Monkey bites may be especially dangerous and should be attended to quickly.

Vigorously wash bite wounds with soap and water. This is probably the most important step in preventing rabies and other infections.

Give tetanus booster to previously immunized victims if more than 5 years have elapsed since the last administration. Begin primary tetanus series in the unvaccinated.

See Rabies Section of this series for information on post-exposure prophylaxis for that disease.

Because up to 85% of bite wounds harbor pathogens, prophylactic antibiotic treatment may be helpful.

Except for facial and very severe wounds, suturing of most bite wounds is not indicated.

PITFALLS

An animal bite is a reportable health event. The animal bite report should be filled out completely.

A rapid investigation of the bite should be completed in order to determine whether rabies post-exposure prophylaxis is needed.

Immediate cleansing of the wound is the most important means of avoiding post-bite infections, including rabies.

Although the bites of rodents, rabbits, etc. are at extremely low risk for transmitting rabies, such bites still need to be attended to in order to prevent infections with other diseases.

Bat "bites" or exposures may not always be apparent. See **Rabies Section** for more information.

RABIES

INFECTIOUS AGENT

Rabies is caused by a rhabdovirus of the genus *Lyssavirus*. Serologic and molecular biologic techniques can distinguish among strains which are geographically distinct and/or are maintained in various animal populations, e.g., bat, raccoon and skunk.

SIGNS AND SYMPTOMS

Rabies in animals can take a variety of forms, but a common prodromal feature is a change in behavior. Normally docile animals may become aggressive and vice versa. Animals may next progress through a "furious" phase and then a paralytic phase, although not all rabid animals exhibit all of the stages. The appearance of nocturnal animals such as raccoons and skunks during daylight hours and without fear of humans may indicate rabies infection. It is possible for an animal, especially a wild animal, to be rabid and not show any obvious clinical signs.

Rabies in humans usually begins with generalized anxiety with tingling, pain and/or itching at the site of inoculation. This stage is followed by a nondescript flu-like illness. Next, an excitative stage, characterized by hypersensitivity to external stimuli and by hydrophobia, appears in most patients. Finally, a paralytic phase ends with death, usually due to respiratory paralysis.

TRANSMISSION

Rabies virus is transmitted in nature through the introduction of virus-containing saliva from an infected animal into a susceptible animal or human by way of a bite or scratch, a break in the skin, or a mucous membrane. Rabies virus may be present in the saliva of animals even during the prodromal period. Human to human transmission has been reported as a result of corneal transplantation. Aerosol transmission to humans in bat caves has also been suggested.

INCUBATION PERIOD

The incubation period in humans is usually 3 to 8 weeks. Incubation periods of months to over a year are not uncommon, however.

The incubation period in animals varies. In dogs, it is usually 3 to 8 weeks, although incubation periods longer than 6 months have been reported.

PERIOD OF COMMUNICABILITY

The period of communicability is variable and depends on the species of animal infected, among other things. In dogs, virus shedding in the saliva occurs at or a few days before the development of prodromal signs and continues until death. About 50% of field-infected dogs had rabies virus in their saliva at death. In other species of domestic and wild animals, the period of communicability is not well known. Some animals may shed virus without exhibiting any obvious clinical signs of disease.

DIAGNOSIS

Rabies in animals and humans is normally diagnosed by direct fluorescent antibody (FA) testing of the brain. Other tests include mouse inoculation, FA test of frozen skin sections, and serology.

INVESTIGATION

All animal bites and other potential exposures to rabies virus should be investigated thoroughly and without delay. Every effort should be made to determine the circumstances and degree of exposure and to locate and capture the biting animal. The vaccination history of biting dogs and cats should be noted, as well as whether the bite was provoked or not. (See **Animal Bites** section.)

CONTROL MEASURES

Most human rabies cases in the United States are the result of direct contact with infected wildlife or indirect contact with wildlife through cats or dogs and other domestic animals. Thus, avoiding contact with wildlife, control of stray dog and

cat populations, and vaccination of all dog *and* cats (per Indiana law) would greatly reduce the risk of rabies infection for humans. In areas with epidemic wildlife rabies such as the eastern seaboard states and Texas, wildlife vaccination projects have been initiated. For the present and near future, Indiana has been spared the need for such programs.

PREVENTION

Pre-exposure immunization is appropriate for persons, such as conservation officers, animal control workers and veterinarians, at high risk of exposure to rabies-infected animals. The primary series consists of three injections on days 0, 7 and 14 or 21. Post-immunization serologic testing and/or booster doses are used depending on the level of continuing risk of exposure.

Post-exposure immunization (injections on days 0, 3, 7, 14, and 28 or 35, plus rabies immune globulin) should be given under the following circumstances: 1) bites, scratches or contamination of broken skin or mucous membranes with the saliva of a known rabid animal or with any wild animal unavailable for testing; 2) encounter with a bat in which the possibility of a bite, scratch or contact with saliva can not be ruled out; and 3) bites or scratches from a domestic animal, usually a cat or dog that is unavailable for testing. In 3), the circumstances of the exposure and the incidence of rabies in the geographic area should be taken into consideration when deciding whether to proceed with post-exposure immunization. For rabid **dogs and cats only**, virus in the saliva will precede death by no more than 10 days. Thus if a dog or cat bites a human, the animal may be observed for 10 days. If it does not become ill or die within that time, it can be presumed to have not been infectious at the time of the bite, and post-exposure immunization will not be necessary. There is no known risk associated with delaying the start of post-exposure immunization until after the 10-day observation period. **The 10-day observation period is not applicable to any other species.** An unwanted dog or cat that exposes a human should be humanely killed and the head sent for testing. (See the flow chart at the end of this section for more information on post-exposure immunization decision-making.)

Dogs and cats with a current vaccination status and which have been bitten or otherwise exposed to a known rabid animal, carnivorous wildlife species or bat should be revaccinated and observed for 45 days. An unvaccinated dog or cat that is exposed to a known rabid animal, carnivorous wildlife species or bat should be euthanized immediately. If the owner is unwilling to have this done, the animal should be placed in quarantine for 6 months and vaccinated 1 month prior to release.

PITFALLS

The 10-day observation period applies only to dogs and cats.

Most of the human rabies cases in the U.S. in recent years have been due to the bat strain of the virus. In many of these cases, there was no known bat bite, and in a few cases, no known bat exposure at all. Thus the current recommendation is that, if bat exposure has occurred and a bite or other contact can not be ruled out, post-exposure immunization is warranted.

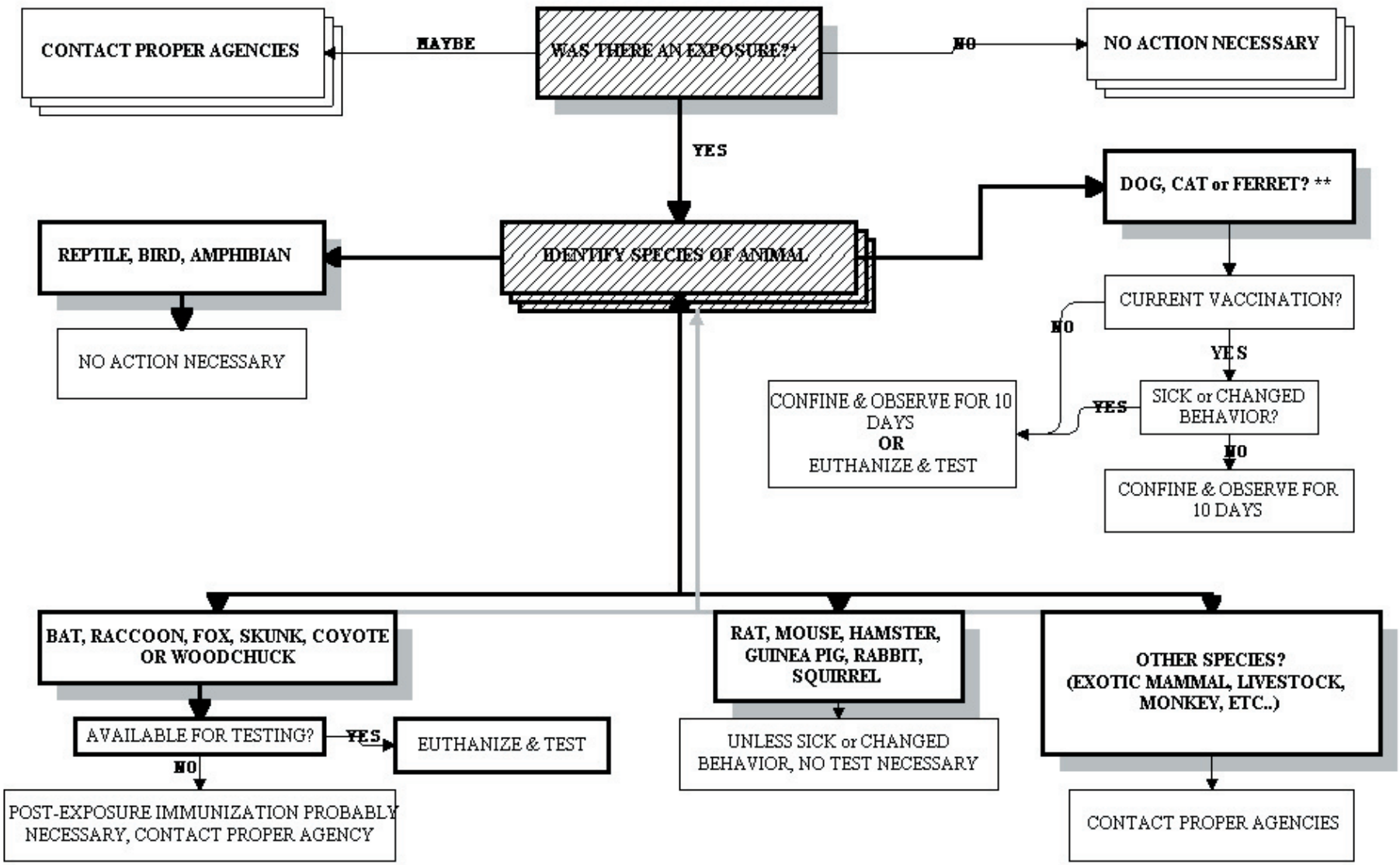
Bites by rodents and rabbits almost never require testing or treatment. Ground hogs, opossums and livestock are rarely infected with rabies in Indiana and decisions on whether to initiate post-exposure immunization for humans exposed to these species should be based on the individual circumstances.

There has not been a rabid dog or cat diagnosed in Indiana in since 1989 and 1984, respectively. Thus, the risk of rabies transmission from these species is low, but **not** zero.

Information on vaccine can be obtained from Merieux Institute, at 1-800-VACCINE.

It is very important to ensure that dogs and cats being held under observation for 10 days are kept in secure facilities (kennel, clinic, pound, home, etc.), that the persons responsible for keeping the animal under observation understand their responsibilities and that someone from the local health department determines the status of the dog or cat after the 10 days are up. The fact that the animal did not become ill, and thus was not shedding virus at the time of the bite, should be communicated to the bite victim.

CASE MANAGEMENT WHEN A HUMAN IS BITTEN



* See "Rabies Prevention - United States 1991" in the Appendix

** For dogs, cats and ferrets only, a 10 day confinement and observation period may be ordered in place of euthanisia and testing of the brain. Bites to the head by unvaccinated dogs, cats or ferrets showing signs of illness or changed behavior are considered to be of the highest risk and may war rent immediate testing. Local laws should be consulted when considering euthanasia of strays.

ANIMALS BITING ANIMALS

Bites to animals are not reportable events in most counties, but create much concern among animal owners when their pets may have been exposed to a rabies suspect, especially non-domestic animals. Because our pets have the closest contact with the human population, they serve as the potential reservoir of rabies infection for people. Only through vaccination of *all* dogs and cats do we minimize this risk. There are populations of unvaccinated dogs and cats that need to be dealt with in both human and animal bites. This section deals with animal-to-animal contact and the proper handling of these cases.

Included in the appendix and referred to in this section is the *Compendium on Animal Rabies Control* which is updated each year by the National Association of State Public Health Veterinarians. It has been incorporated into Indiana law (345 IAC 1-5 sec 3) as the reference for vaccination and handling of animals in bite situations. This is to be updated each year with the most recent information regarding vaccination and animal disposition in various situations. Some events have to be handled on a case-by-case basis and consulting with the Board of Animal Health for a decision in these matters will be necessary.

Also included in this section are general guidelines for confinement in different situations. Each county or municipality may have its own guidelines and requirements which are incorporated into its animal control statute. These are provided for those local agencies who need some guidance as to what to do with an animal in one of those situations where it may have had contact with a positive animal or rabies suspect.

With good management of difficult situations and continuous emphasis on vaccination of all dogs and cats in Indiana, it is hoped that most of the animal to animal bites can have a satisfactory outcome for both owners and animals.

Exposed Pet with a Current Rabies Vaccination

A. Pet has been bitten or scratched by a dog, cat, or ferret:
Biting animal (dog or cat) is currently vaccinated for rabies:
1. (VERY LOW RISK SITUATION)
Seek veterinary care for wound, if needed
Report incident to local animal control authorities
2. The biting animal (dog, cat, or ferret) is not currently vaccinated or its vaccination status is unknown, and the biting animal: Is available for 10 days close observation:
Seek veterinary care for wounded, if needed
Notify local animal control authorities
Precautionary rabies booster optional
Is not available for 10 days close observation:
Proceed as in E

B. Pet exposed to a confirmed rabid animal
1. PET DOG, CAT, or FERRET exposed:
Veterinary care for wound, if needed
Rabies booster immediately
Notify Board of Animal Health and local animal control
Strict confinement for three months
2. EXOTIC PETS exposed:
Other exotics (e.g., wolf hybrids) should be euthanized. If not, Board of Animal Health should be notified

C. Pet directly exposed to a wild animal or domesticated wildlife (bite, scratch, fight, or carcass contact)
1. Wild animal is a known rabies reservoir species in Indiana (Bat)
Is wild animal available for rabies testing?
YES: Euthanize and test wild animal (see procedures for submission)
NO: Presume pet exposed - go to B
2. Wild animal is not a known rabies reservoir species in Indiana, but is a reservoir in other states (Raccoon, skunk, fox, coyote)
Is wild animal available for rabies testing?
YES: Submit head to state rabies lab for testing (see procedures for submission)
NO: Consult with Board of Animal Health on likelihood of exposure to rabies and need for rabies booster, observation, or confinement

3. Wild animal is not a known rabies reservoir species
Consult Board of Animal Health on need for rabies testing, likelihood of exposure, and need for observation or confinement
Precautionary rabies booster optional

D. Pet has been bitten or scratched by a domestic pet other than a dog, cat, or ferret
1. “Pocket pets” (hamsters, gerbils, guinea pigs) and rabbits kept indoors:
Negligible risk for rabies
No specific action needed
2. Others -- consult Board of Animal Health for advise on a case-by-case basis

E. Pet has a wound of unknown origin that could have resulted from a bite
1. Terrestrial rabies (skunk, fox, raccoon, coyote) is present in local area Veterinary care for wound
Rabies booster immediately
45 days strict confinement
2. Terrestrial rabies (skunk, fox, raccoon, coyote) is NOT present in local area
Seek veterinary care for wound
Precautionary rabies booster optional

F. Pet potentially exposed by proximity to wildlife, but no direct contact or wounds
Low risk situation. No action required.
Precautionary rabies booster optional
Consider close observation of pet for 45 days

EXPOSED PET WITHOUT A CURRENT RABIES VACCINATION *

A. Pet has been bitten or scratched by a dog or cat
1. Biting animal (dog, cat, or ferret) is currently vaccinated for rabies:
(VERY LOW RISK SITUATION)
Seek veterinary care for wound, if needed
Report incident to local animal control authorities
Remind owner to vaccinate pets
2. The biting animal (dog, cat, or ferret) is NOT currently vaccinated for rabies or its vaccination status is unknown, and the biting animal:
Is available for 10 days quarantine:
Seek veterinary care for wound
Do NOT vaccinate exposed pet until after biting pet is determined to be free of rabies
Is not available for 10 days observation:
Proceed as in E

B. Pet exposed to a confirmed rabid animal
1. PET DOG, CAT, or FERRET exposed:
Euthanize pet immediately
If not willing to euthanize pet, notify Board of Animal Health and local animal control
Seek veterinary care for wound
Quarantine pet for six months
Vaccinate pet 1 month prior to release
2. EXOTIC PETS (ferret, canine or feline hybrid, any wildlife) exposed:
Euthanize exposed pet
Notify Board of Animal Health if not euthanized

C. Pet directly exposed to a wild animal or domesticated wildlife (bite, scratch, fight, or carcass contact)
1. Wild animal is a known rabies reservoir species in Indiana (Bat)
Is wild animal available for rabies testing?
YES: Euthanize and test wild animal (see procedures for submission)
NO: Presume pet exposed - go to B
2. Wild animal is not a known rabies reservoir species in Indiana but is a reservoir in other states (raccoon, skunk, fox, coyote)
Is wild animal available for rabies testing?
YES: Submit head to state rabies lab for testing (see procedures for submission)
NO: Consult with Board of Animal Health on likelihood of exposure to rabies, need for quarantine, advisability of vaccination
3. Wild animal is not a known rabies reservoir species
Consult Board of Animal Health on need for rabies testing, likelihood of exposure, and recommendation for vaccination or quarantine

D. Pet has been bitten or scratched by a domestic pet other than a dog, cat, or ferret.
1. "Pocket pets" (hamsters, gerbils, guinea pigs) and rabbits kept indoors
Negligible risk for rabies
Remind owner to vaccinate pets
2. Others -- consult Board of Animal Health for advise on a case-by-case basis

E. Pet has a wound of unknown origin that could have resulted from a bite
1. Terrestrial rabies (skunk, fox, raccoon, coyote) is present in local area:
Consider pet exposed to rabies - go to B
2. Terrestrial rabies NOT present in area:
Seek veterinary care for wound
Remind owner to vaccinate pets

F . Pet potentially exposed by proximity to wildlife, but no direct contact or wounds
Remind owner to vaccinate pets
Advise close observation of pet for six months

* This includes pets, such as canine and feline hybrids, for which there is no approved rabies vaccination. If exposed pet has had prior rabies vaccine that is currently out of date, then consult Board of Animal Health for advice.

GUIDELINES FOR QUARANTINE

One essential component of effective rabies control is the management of dogs and cats known to or suspected to have been exposed to rabid (or suspect rabid) animal, or to have bitten or exposed a person. Based upon the circumstances involved in the bite and the vaccination status of the animal involved, one of the following quarantine plans will be required at the discretion of the animal control officer involved.

QUARANTINE PLANS:

1. CLOSE OBSERVATION

a. Animal shall be kept on owner's premises.
b. Owner shall be informed of potential rabies.
c. Owner shall be required to notify enforcing agency of unusual behavior or change in health status of pet.

2. STRICT CONFINEMENT

a. Animal shall be kept on designated property—in the house, garage, or other escape-proof building or enclosure approved by the local director of health.
b. Animal shall be leash-walked under immediate control of an adult on property designated for confinement.
c. Owner shall be informed of potential rabies and given instructions in writing.
d. Owner is required to notify immediately enforcing agency of unusual behavior or change in health status of pet.

3. QUARANTINE

a. Animal shall be confined off owner's property in a designated facility, i.e., animal shelter, veterinary hospital or qualified commercial kennel.
b. Strict quarantine on owner premises shall be possible at discretion of animal control. (See back of page for additional details.)
c. In case of death of quarantined animal, contact local animal control or health official. **DO NOT DISPOSE OF ANIMAL!**

Facility used for quarantine shall:

1. Ensure an escape-proof environment which prevents human and other animal contact.
2. Be verifiable (i.e., subject to unannounced periodic spot checks by the animal control or local health department).
   a. outside cage with double walls (must be sufficient housing to shelter animal from the weather).
   b. indoor cage
      (1) since the walls of the main building serve as a second barrier, indoor may be single-walled.
      (2) an example of a cat confinement pen is shown in Figure 1 although it is recommended that these dimensions be significantly enlarged to provide more comfort for the animal.
      (3) some sort of divider system as illustrated in Figure 2 (to exclude positively any human contact) is recommended in very high-risk cases (i.e., unvaccinated animal bitten by known or highly suspected rabies vector).
      (4) enclosing part of a basement, indoor porch, or recreation room which has windows available for health department officials to monitor confinement compliance is acceptable.

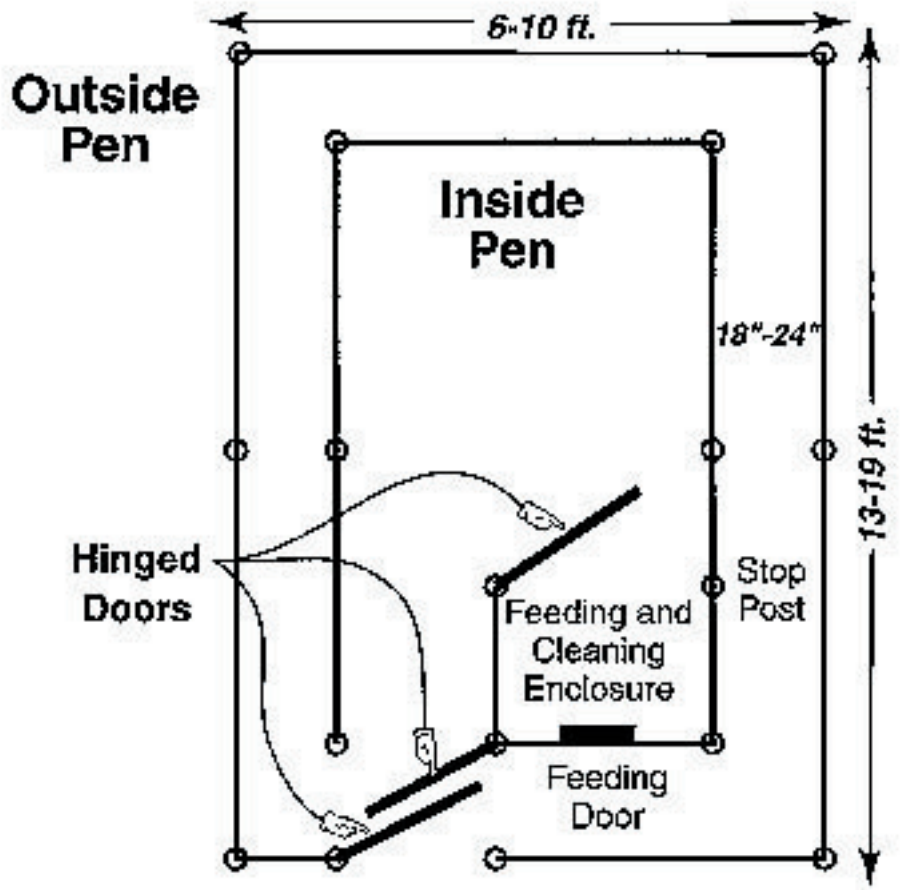
When the exposed animal is unvaccinated, euthanasia is recommended. Alternatively, the owner has the option of arranging for a 6-month strict confinement. Confinement must be strict because of the special public health risks associated with these animals (i.e., those potentially incubating rabies), and the need to prevent human and other animal exposures form occurring should rabies symptoms develop.

RECOMMENDED CONSTRUCTION FOR 6 MONTHS STRICT CONFINEMENT PEN FOR DOGS

Recommended specifications: Note: Overall length and width may vary

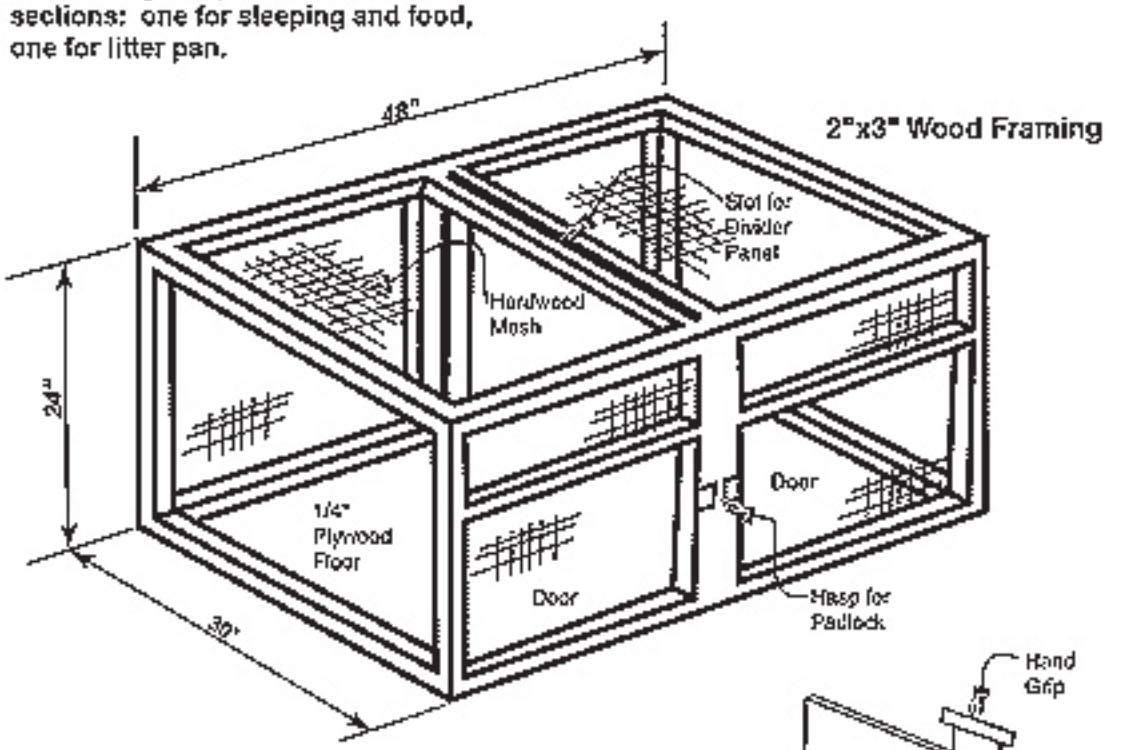
1. Height of inside pen at least 6 feet or 3 times the height of the dog at the shoulder.
2. Height of outside pen at least 4 feet.
3. Floor of inner pen should be covered with chainlink extending at least 1 1/2 feet from inner pen wall toward center of pen or down in the ground to prevent digging out.
4. Feeding and cleaning enclosure and door recommended to prevent human contact with animal during feeding cage cleaning.
5. Posts: 4 x 4 pressure-treated wood or equivalent; driven or set in concrete, 1 1/2 feet down.
6. Inside pen: Wire chainlink 12 1/2 gauge or lower, or equivalent. Welded mesh or diamond link.
7. Outside pen: 1 foot x 1 foot hardware or poultry mesh or stronger.

Prepared by Veterinary Public Health, Biological Services Program, Consumer Health Services, New Jersey State Department of Health.

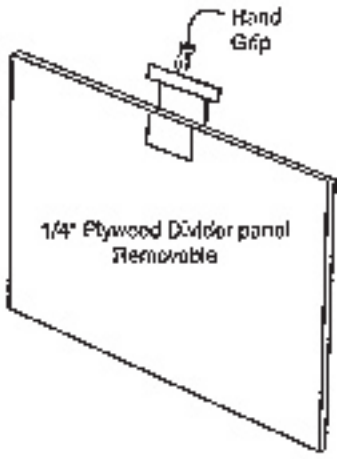


ISOLATION CAGE FOR ONE CAT

NOTE: Cage may be divided into two sections: one for sleeping and food, one for litter pan.



Slide divider panel in place to isolate cat on one side while placing food on other side or cleaning cage.



NOTE: The dimensions may be significiantly enlarged to increase comfort space for cat. Divider system is necessary only in high-risk cases (i.e., never vaccinated animal bitten by known, or highly suspect, rabid animal.)

SUBMISSION OF SAMPLES

When the decision is made either to euthanize an animal or submit a dead animal for rabies examination, several procedures must be followed to obtain quick and accurate results. Many times rabies prophylaxis in a human or vaccination of an animal is dependent on these results. The U.S. mail is not accepting samples for delivery and United Parcel Service
delayed.

Included in this section also is the Rabies Examination Form. It needs to be filled out entirely in order for the accurate interpretation of results. The veterinarian who submits the sample can provide some of the information as well as the animal control official, health official, animal owner and bite victim. Cooperation in this process and sharing of information will give everyone involved a better outcome in any situation.

Maps and phone numbers of Laboratories that can be used for samples are also included. **REMEMBER—only the Rabies laboratory at ISDH can run the test for rabies in an animal.** The diagnostic laboratory at Purdue and in Southern Indiana can submit the proper specimen if the animal is being examined for other reasons.

Following suggested guidelines will allow for quick, accurate results and resolution of potentially hazardous situations.

I. PACKAGING AND SHIPPING OF SPECIMENS FOR RABIES EXAMINATION

A. Heads must be removed from carcasses prior to shipment.
   1. Rubber gloves should be worn while the head is being removed and packaged. Gloves should be disposed of after use.
   2. Sever neck so as not to damage the skull. Local veterinarians can perform this task. Allow fluids and blood to drain from the head. Keep head as clean as possible.

B. The shipping container should consist of the following:

   One corrugated cardboard shipping carton
   One styrofoam liner or container
   One plastic bag for specimen (size appropriate)
   Dry ice or prepared ice packets (like those sent with pharmaceuticals and biologics)
   One sealed, plastic bag containing Rabies Report form with history of animal.

C. History
   1. Animal history written as completely as possible. The Indiana State Department of Health Rabies Report form should be used. County health departments and veterinary clinics should have a supply of the blank forms.
   2. Name and address of all persons exposed included. Each person is given a copy of the report.
   3. Place this form in the sealed, plastic bag and place in carton on top of liner.

D. Packaging
   1. Place the head of the animal in an appropriate size plastic bag and secure the top of the bag.
   2. Place dry ice or ice packs into the styrofoam liner.
   3. Place bag containing head on top of ice, in container, and secure tightly.
   4. Place plastic bag with history on top of the container, seal the shipping box, make sure arrows point up to the top of the box, and indicate RABIES SUSPECT.
   5. Fill out mailing label and secure to the top of the box.

E. Shipping
   1. The package should be shipped prepaid to:
      Indiana State Department of Health
      1330 West Michigan Street, P.O. Box 1964

Indianapolis, IN 46206
Telephone: 317/383-6242

Do not send to the Purdue Animal Disease Diagnostic Laboratory. If the animal is sent to ADDL for other tests, then indicate that they forward the appropriate sample to the Rabies laboratory.

2. Use the method of shipment (UPS, bus, hand deliver) that will assure prompt service.
3. Call the laboratory or switchboard and inform them of probable time of arrival and route of shipment.
4. Any bite case in which the history reveals a strong probability of rabies should be handled with utmost speed. If possible, hand-deliver such specimens to the laboratory.
5. Do not ship on weekends unless prior approval has been obtained from the Indiana State Department of Health Laboratory. A resident student is on duty to receive after-hours deliveries. Ring bell or call on phone located at the front door.

II. LABORATORY RESULTS

The laboratory conducts the fluorescent antibody (FA) test on brains that are satisfactory for examination or mouse inoculation tests on selected specimens when indicated. Results of these tests will be mailed back to the address given on the Rabies Report Form. Positive results will be called immediately to the county health department or agency from which the specimen was shipped, and to physicians and exposed persons. Veterinarians and/or animal control personnel who handled positive animals or carcasses should also be notified as soon as possible.

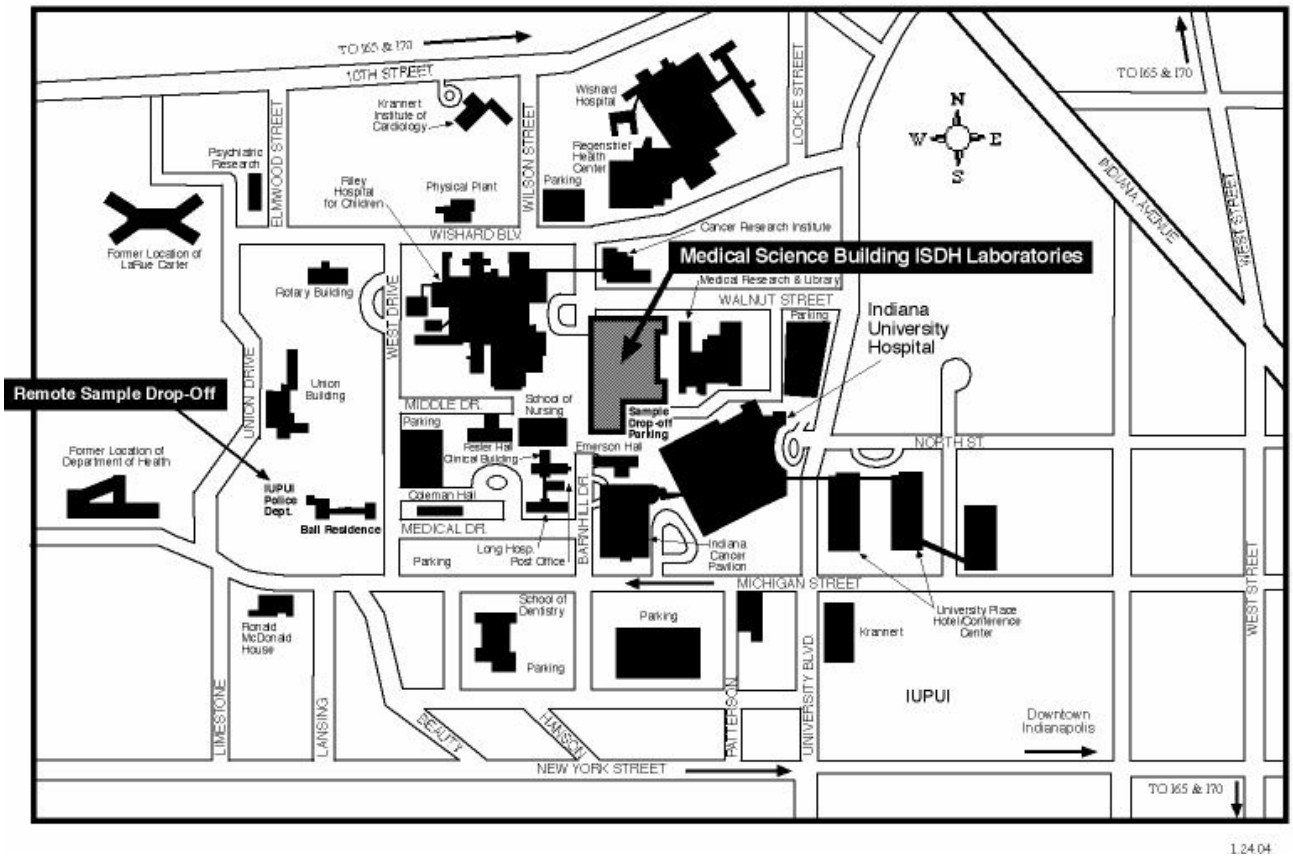
The local health officer or a designated person in the department will be available for consultation in most cases. If not, then telephone contact with the State Department of Health in emergency cases will be in order. The office to contact is:

Indiana State Department of Health
1330 West Michigan Street
P.O. Box 1964
Indianapolis, IN 46206
Telephone Number: 317/233-1325, or (after hours) 317/383-6144

After-Hours Services:

The Indiana State Department of Health (ISDH) Rabies Laboratory is open from 8:15 am to 4:45 pm through the week. Emergencies may arise on weekends or holidays in which immediate rabies testing is indicated. In true **emergency** situations, the local health officer may coordinate efforts for immediate testing. The Indiana State Police *may* be able to provide emergency transportation for the head and the ISDH Rabies Lab Technician can be dispatched to perform “stat” testing. The ISDH after-hours duty officer can be contacted at 317/383-6144.

Medical Science Building ISDH Laboratories



The Indiana State Health Department Rabies Laboratory is located at 635 N. Barnhill Dr. Indianapolis. This is the Medical Science Building ISDH Laboratories on the above map.

Rabies suspects may be hand delivered during normal work hours 8AM to 5PM, Monday thru Friday. Special deliveries may be arranged by phoning the laboratory at 317 233-8000 and requesting the rabies laboratory staff. If they are not available, ask for Tom Cronau or Lixia Liu. After hours, weekends, and holidays the IUPUI police station at 1232 West Michigan will accept and hold specimens until the ISDH next work day. Rabies specimens must be properly packaged with the necessary laboratory request forms when delivered at either location.

INSTRUCTIONS ON HOW TO GET TO THE ANIMAL DISEASE DIAGNOSTIC LABORATORY (ADDL)

FROM I-65 (north or south)

I-65 to 43 South
43 south to State Road 26 West (about 5 miles—McDonald's on right) right on 26
West to Grant Street (2nd light) (University bookstore and Krannert building on opposite corners)
Left (south) on Grant to Harrison (4-way stop)
Right (west) on Harrison to ADDL sign (on left)
Left (south) into parking lot—stay to right-down hill.

FROM U.S. 52 BYPASS

To Salisbury (Sorrento's—MCL Cafeteria)
South on Salisbury to T (S.R. 26 west) (Triple XXX on left side)
Right (west) on State Street to Grant (2nd light) (University Bookstore and Krannert Building on opposite corners)
Left (south) on Grant Street to Harrison (4-way stop)
Right (west) on Harrison to old ADDL
Left (south) into parking lot directly west of old ADDL
Drive through parking lot—stay to right-down hill on left.

FROM S.R. 231 SOUTH

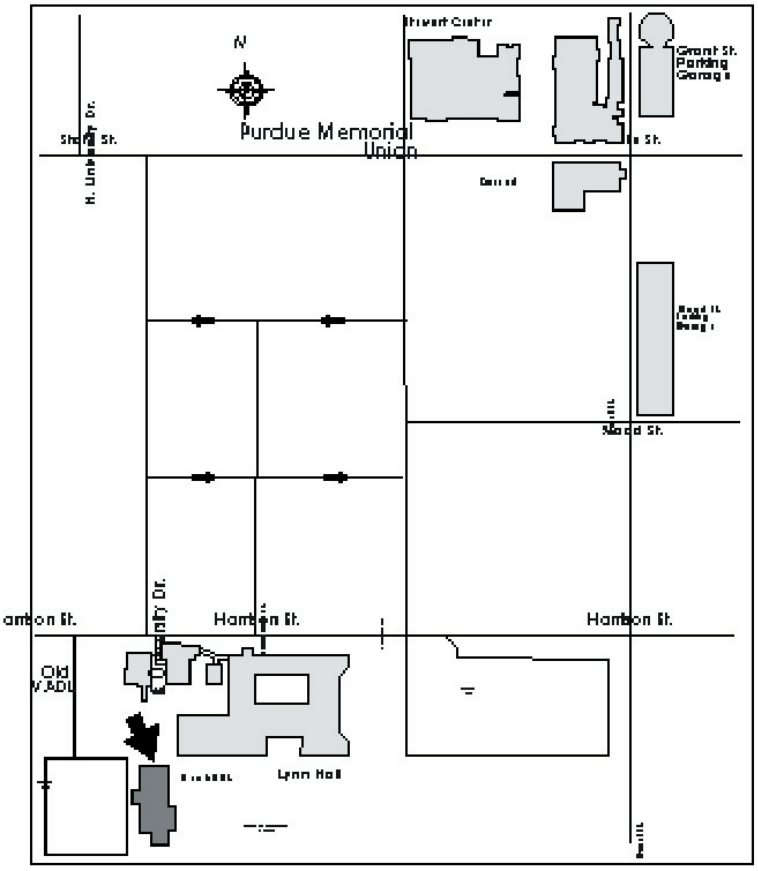
S.R. 231 NORTH to 26 West
26 West through town to Grant Street (2nd Light past 43) (University Bookstore and Krannert Building on corners)
Left (south) on Grant to Harrison (4-way stop)
West (right) on Harrison to old ADDL
Left (south) into parking lot directly west of old ADDL
Drive through parking lot—stay to right-down hill on left.

FROM S.R. 26 West (Otterbein, Pine Village, etc.)

S.R. 26 East to Russell Street (stop light—Lily Hall on right)
Right (south) on Russell to Harrison (3-way Stop)
Left (east) on Harrison to 1st right (parking lot)
Right (south) into parking lot
Drive through parking lot—stay to right, down hill on left.

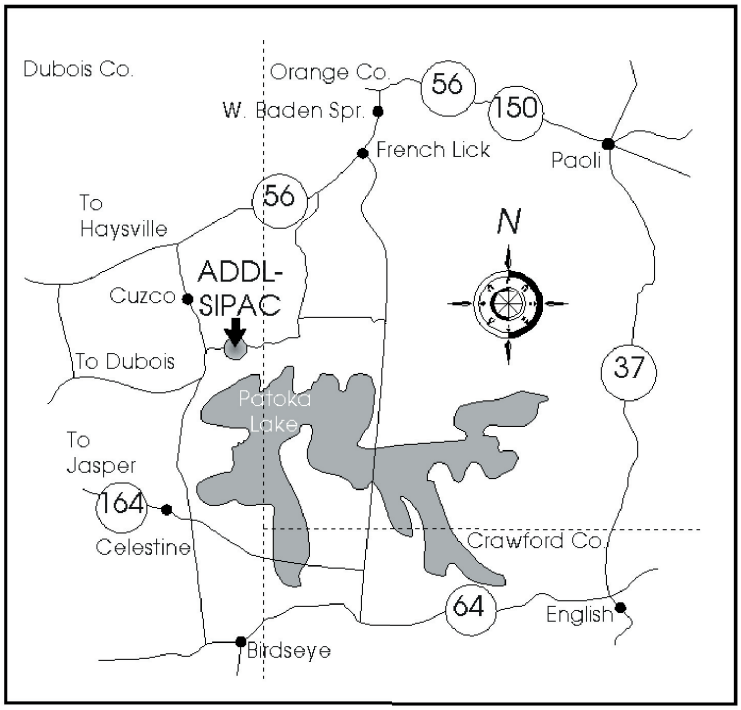
State Road 26 is also known as State Street.

Purdue University School of Veterinary Medicine ADDL (317) 494-7440
West Lafayette, Indiana 47907



ADDL-SIPAC

11367 E. Purdue Farm Road
Dubois, IN 47527-9666
(812) 678-3401



ADDL-SIPAC between Ind 56 and Ind 164 in eastern Dubois County

APPENDIX

INDIANA STATE LAW

INDEX

345 IAC 1-5 RABIES IMMUNIZATION

Sec. 1. Rabies immunization; Certificate; Tag; Quarantine

For the purpose of administering the rabies control law, an animal is deemed to rabies immunized only when the following provisions are met:

(1) The animal must be vaccinated by a licensed and accredited veterinarian. The vaccine used must be licensed and approved by the United States Department of Agriculture. The dosage and administration of either a modified live virus or inactivated vaccine must be in accordance with this rule and the manufacturers' recommendations.

(2) The licensed and accredited veterinarian performing such vaccination shall do the following:

(A) Furnish an antirabies vaccination identification tag with the veterinarian's or clinic's name and telephone number to the owner or custodian of the animal.

(B) Complete a vaccination certificate, or computerized record in triplicate on the animal being vaccinated for rabies as follows:

(i) One (1) copy of the certificate or computerized record shall be given to the owner or custodian of the animal being vaccinated for rabies.

(ii) One (1) copy of the certificate or computerized record shall be forwarded to the county health officer or designated agent upon request or as otherwise directed by the state veterinarian within thirty (30) days of the vaccination.

(iii) One (1) copy of the certificate or computerized record shall be retained by the veterinarian vaccinating such animal covering the period of immunization.

(3) The animal owner or custodian shall affix such tag to the collar or harness of each animal, where it shall be worn at all times.

Immunized animals are subject to all quarantine provisions which may be imposed by state or local regulations. The final determination of an animal's rabies status shall be made by the state veterinarian.

Sec. 2 Rabies vaccination or dogs and cats

All dogs and cats three (3) months of age and older must be vaccinated annually against rabies with a licensed and approved vaccine administered by a licensed, accredited veterinarian.

Sec. 3 Animal rabies control program

(a) A statewide animal rabies control is established.

(b) The Compendium of Animal Rabies control, 1995, National Association of State Public Health Veterinarians, Inc., herein incorporated by reference, shall be used in the implementation of the program established under subsection (a).

NOTE: IC 35-46-3-1—Harboring a nonimmunized dog

A person who knowingly or intentionally harbors a dog that is over the age of six (6) months and not immunized against rabies commits harboring a nonimmunized dog, a class C infraction. However, the offense is a class B misdemeanor if the dog causes bodily injury by biting a person.

REPORTING AND INVESTIGATION OF ANIMAL BITES

410 IAC 1-2.1-6(C) REPORTING, INVESTIGATION, QUARANTINE, WILD ANIMALS AND SUBMITTING ANIMAL HEADS.

(1) Reporting: Every case of a human bitten by a domestic or wild animal shall be reported promptly to the local health officer having jurisdiction. If a physician is in attendance, it shall be reported by such physician. If no physician is in attendance and the person bitten is a child, it shall be the duty of the parent or the guardian to make such a report immediately. If the person bitten is an adult, such person shall make the report or, if or, if incapacitated, it shall be reported by whomever is caring for the person bitten. It shall be the duty of the local health officer to report directly to the State Board of Health on the prescribed form the information concerning the bite.

(2) Investigation: Each reported bite shall be investigated immediately by the local health officer or his designee.

(3) Quarantine and/or laboratory examination: Any domestic animal which has bitten a person or is suspected or being rabid shall be confined and held in observation for the period specified in IC 15-2.1-6-11 (not less than 10 days) or filled at once for laboratory examination. The head of any animal that dies during the period of observation or is killed subsequent to having bitten a person or another animal and is suspected of being rabid shall be removed, packed in an iced container and forwarded immediately to the laboratory of the State Board of Health for examination.

Any wild animal that has bitten a human or domestic animal or is suspected of being rabid shall not be placed under observation, but shall be killed at once and the head submitted to the laboratory of the State Department of Health. (Rodents and lagomorphs are seldom rabid in the United States; these animals should be submitted for laboratory examination only under exceptional circumstances such as an unprovoked attack.)

(4) Responsibility for submitting animal heads: The animal's owner shall be responsible for submitting the animal's head to the State Department of Health for rabies examination; in the case of an unowned animal or an animal whose owner cannot be found, the local health, department shall assume this responsibility.

Compendium of Animal Rabies Prevention and Control, 2005*
National Association of State Public Health Veterinarians, Inc. (NASPHV)
(www.nasphv.org)

Rabies is a fatal viral zoonosis and a serious public health problem.[1] The recommendations in this compendium serve as the basis for animal rabies prevention and control programs throughout the United States and facilitate standardization of procedures among jurisdictions, thereby contributing to an effective national rabies-control program. This document is reviewed annually and revised as necessary. Principles of rabies prevention and control are detailed in Part I; Part II contains recommendations for parenteral vaccination procedures; all animal rabies vaccines licensed by the United States Department of Agriculture (USDA) and marketed in the United States are listed in Part III.

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ENDORSED BY:
American Veterinary Medical Association (AVMA)
Centers for Disease Control and Prevention (CDC)
Council of State and Territorial Epidemiologists (CSTE)
National Animal Control Association (NACA)

Part I: Rabies Prevention and Control

A. PRINCIPLES OF RABIES PREVENTION AND CONTROL

1. **RABIES EXPOSURE:** Rabies is transmitted only when the virus is introduced into bite wounds, open cuts in skin, or onto mucous membranes from saliva or other potentially infectious material such as neural tissue.[2] Questions about possible exposures should be directed to state or local health authorities.

2. **HUMAN RABIES PREVENTION:** Rabies in humans can be prevented either by eliminating exposures to rabid animals or by providing exposed persons with prompt local treatment of wounds combined with the administration of human rabies immune globulin and vaccine. The rationale for recommending preexposure and postexposure rabies prophylaxis and details of their administration can be found in the current recommendations of the Advisory Committee on Immunization Practices (ACIP).[2] These recommendations, along with information concerning the current local and regional epidemiology of animal rabies and the availability of human rabies biologics, are available from state health departments.

3. **DOMESTIC ANIMALS:** Local governments should initiate and maintain effective programs to ensure vaccination of all dogs, cats, and ferrets and to remove strays and unwanted animals. Such procedures in the United States have reduced laboratory-confirmed cases of rabies in dogs from 6,949 in 1947 to 117 in 2003.[3] Because more rabies cases are reported annually involving cats (321 in 2003) than dogs, vaccination of cats should be required. Animal shelters and animal control authorities should establish policies to ensure that adopted animals are vaccinated against rabies. The recommended vaccination procedures and the licensed animal vaccines are specified in Parts II and III of the Compendium.

4. **RABIES IN VACCINATED ANIMALS:** Rabies is rare in vaccinated animals.[4] If such an event is suspected it should be reported to state public health officials, the vaccine manufacturer, and to the USDA, Animal and Plant Health Inspection Service, Center for Veterinary Biologics (www.aphis.usda.gov/vs/cvb/ic/adverseeventreport.htm, by telephone at 800-752-6255, or by e-mail to CVB@usda.gov). The laboratory diagnosis should be confirmed and the virus characterized by a rabies reference laboratory. A thorough epidemiologic investigation should be conducted.

5. **RABIES IN WILDLIFE:** The control of rabies among wildlife reservoirs is difficult.[5] Vaccination of free-ranging wildlife or selective population reduction might be useful in some situations, but the success of such procedures depends on the circumstances surrounding each rabies outbreak (See Part I, C. Control Methods in Wildlife). Because of the risk of rabies in

wild animals (especially raccoons, skunks, coyotes, foxes, and bats), the AVMA, the NASPHV, and the CSTE strongly recommend the enactment and enforcement of state laws prohibiting their importation, distribution, and relocation.

6. **RABIES SURVEILLANCE:** Laboratory-based rabies surveillance is an essential component of rabies control and prevention programs. Accurate and timely information is necessary to guide human postexposure prophylaxis decisions, determine the management of potentially exposed animals, aid in emerging pathogen discovery; describe the epidemiology of the disease, and assess the need for and effectiveness of oral vaccination programs for wildlife.

7. **RABIES DIAGNOSIS:** Rabies testing should be performed by a qualified laboratory, designated by the local or state health department[6] in accordance with the established national standardized protocol for rabies testing (www.cdc.gov/ncidod/dvrd/rabies/Professional/publications/DFA_diagnosis/DFA_protocol-b.htm). Euthanasia[7] should be accomplished in such a way as to maintain the integrity of the brain so that the laboratory can recognize the anatomical parts. Except in the case of very small animals, such as bats, only the head or brain (including brain stem) should be submitted to the laboratory. Any animal or animal specimen being submitted for testing should be kept under refrigeration (not frozen or chemically fixed) during storage and shipping.

8. **RABIES SEROLOGY:** Some "rabies-free" jurisdictions may require evidence of vaccination and rabies antibodies for importation purposes. Rabies antibody titers are indicative of an animal's response to vaccine or infection. Titers do not directly correlate with protection because other immunologic factors also play a role in preventing rabies, and our abilities to measure and interpret those other factors are not well developed. Therefore, evidence of circulating rabies virus antibodies should **not** be used as a substitute for current vaccination in managing rabies exposures or determining the need for booster vaccinations in animals.[8]

B. PREVENTION AND CONTROL METHODS IN DOMESTIC AND CONFINED ANIMALS

1. **PREEXPOSURE VACCINATION AND MANAGEMENT:** Parenteral animal rabies vaccines should be administered only by or under the direct supervision of a veterinarian. Rabies vaccinations may also be administered under the supervision of a veterinarian to animals held in animal control shelters prior to release. Any veterinarian signing a rabies certificate must assure that the person administering vaccine is identified on the certificate and is appropriately trained in vaccine storage, handling, administration, management of adverse events, etc. This practice ensures that a qualified and responsible person can be held accountable to assure that the animal has been properly vaccinated.

   Within twenty-eight (28) days after primary vaccination, a peak rabies antibody titer is reached and the animal can be considered immunized. An animal is currently vaccinated and is considered immunized if the primary vaccination was administered at least 28 days previously and vaccinations have been administered in accordance with this Compendium.

   Regardless of the age of the animal at initial vaccination, a booster vaccination should be administered 1 year later (See Parts II and III for vaccines and procedures). There are no laboratory or epidemiologic data to support the annual or biennial administration of 3-year vaccines following the initial series. Because a rapid anamnestic response is expected, an animal is considered currently vaccinated immediately after a booster vaccination.

   (a) DOGS, CATS, AND FERRETS

   All dogs, cats, and ferrets should be vaccinated against rabies and revaccinated in accordance with Part III of this Compendium. If a previously vaccinated animal is overdue for a booster, it should be revaccinated. Immediately following the booster, the animal is considered currently vaccinated and should be placed on an annual or triennial schedule depending on the type of vaccine used.

   (b) LIVESTOCK

   Consideration should be given to vaccinating livestock that are particularly valuable or that might have frequent contact with humans (e.g., in petting zoos, fairs, and other public exhibitions; see *The Compendium of Measures to Prevent Disease and Injury Associated with Animals in Public Settings* at www.nasphv.org).[9] Horses traveling interstate should be currently vaccinated against rabies.

   (c) CONFINED ANIMALS

   (1) WILD

   No parenteral rabies vaccines are licensed for use in wild animals or hybrids. Wild animals or hybrids should not be kept as pets.[10-13]

(2) MAINTAINED IN EXHIBITS AND IN ZOOLOGICAL PARKS
Captive mammals that are not completely excluded from all contact with rabies vectors can become infected. Moreover, wild animals might be incubating rabies when initially captured; therefore, wild-caught animals susceptible to rabies should be quarantined for a minimum of 6 months before being exhibited. Employees who work with animals at such facilities should receive preexposure rabies vaccination. The use of pre- or postexposure rabies vaccinations for employees who work with animals at such facilities might reduce the need for euthanasia of captive animals. Carnivores and bats should be housed in a manner that precludes direct contact with the public.

2. STRAY ANIMALS: Stray dogs, cats, and ferrets should be removed from the community. Local health departments and animal control officials can enforce the removal of strays more effectively if owned animals have identification and are confined or kept on leash. Strays should be impounded for at least 3 business days to determine if human exposure has occurred and to give owners sufficient time to reclaim animals.

3. IMPORTATION AND INTERSTATE MOVEMENT OF ANIMALS:

(a) INTERNATIONAL. CDC regulates the importation of dogs and cats into the United States. Importers of dogs must comply with rabies vaccination requirements (42 CFR, Part 71.51[c], www.cdc.gov/ncidod/dq/animal.htm) and complete the CDC form 75.37 (www.cdc.gov/ncidod/dq/pdf/cdc7537-05-24-04.pdf). The appropriate health official of the state of destination should be notified within 72 hours of the arrival into his or her jurisdiction of any imported dog required to be placed in confinement under the CDC regulation. Failure to comply with these requirements should be promptly reported to the Division of Global Migration and Quarantine, CDC, (404) 498-1670.

Federal regulations alone are insufficient to prevent the introduction of rabid animals into the country.[14,15] All imported dogs and cats are subject to state and local laws governing rabies and should be currently vaccinated against rabies in accordance with this Compendium. Failure to comply with state or local requirements should be referred to the appropriate state or local official.

(b) INTERSTATE. Before interstate (including commonwealths and territories) movement, dogs, cats, ferrets, and horses should be currently vaccinated against rabies in accordance with the Compendium's recommendations (See Part I, B.1. Preexposure Vaccination and Management). Animals in transit should be accompanied by a currently valid NASPHV Form #51 (www.nasphv.org/83416/106001.html), Rabies Vaccination Certificate. When an interstate health certificate or certificate of veterinary inspection is required, it should contain the same rabies vaccination information as Form #51.

(c) AREAS WITH DOG-TO-DOG RABIES TRANSMISSION. The movement of dogs from areas with dog-to-dog rabies transmission for the purpose of adoption or sale should be eliminated. Rabid dogs have been introduced into the United States from areas with dog-to-dog rabies transmission.[14,15] This practice poses the risk of introducing canine-transmitted rabies to areas where it does not currently exist.

4. ADJUNCT PROCEDURES: Methods or procedures which enhance rabies control include the following:

(a) IDENTIFICATION. Dogs, cats, and ferrets should be identified (e.g., metal or plastic tags, microchips, etc.) to allow for verification of rabies vaccination status.

(b) LICENSURE. Registration or licensure of all dogs, cats, and ferrets may be used to aid in rabies control. A fee is frequently charged for such licensure and revenues collected are used to maintain rabies- or animal-control programs. Evidence of current vaccination is an essential prerequisite to licensure.

(c) CANVASSING. House-to-house canvassing by animal control officials facilitates enforcement of vaccination and licensure requirements.

(d) CITATIONS. Citations are legal summonses issued to owners for violations, including the failure to vaccinate or license their animals. The authority for officers to issue citations should be an integral part of each animal-control program.

(e) ANIMAL CONTROL. All communities should incorporate stray animal control, leash laws, and training of personnel in their programs.

5. POSTEXPOSURE MANAGEMENT: Any animal potentially exposed to rabies virus (See Part I, A.1. Rabies Exposure) by a wild, carnivorous mammal or a bat that is not available for testing should be regarded as having been exposed to rabies.

(a) DOGS, CATS, AND FERRETS. Unvaccinated dogs, cats, and ferrets exposed to a rabid animal should be euthanized immediately. If the owner is unwilling to have this done, the animal should be placed in strict isolation for 6 months. Rabies vaccine should be administered upon entry into isolation or 1 month prior to release to comply with preexposure

vaccination recommendations (See Part I.B.1.(a)). Protocols for the postexposure vaccination of previously unvaccinated domestic animals have not been validated, and there is evidence that the use of vaccine alone will not prevent the disease.[16] Animals with expired vaccinations need to be evaluated on a case-by-case basis. Dogs, cats, and ferrets that are currently vaccinated should be revaccinated immediately, kept under the owner's control, and observed for 45 days. Any illness in an isolated or confined animal should be reported immediately to the local health department.

(b) LIVESTOCK. All species of livestock are susceptible to rabies; cattle and horses are among the most frequently diagnosed. Livestock exposed to a rabid animal and currently vaccinated with a vaccine approved by USDA for that species should be revaccinated immediately and observed for 45 days. Unvaccinated livestock should be slaughtered immediately. If the owner is unwilling to have this done, the animal should be kept under close observation for 6 months. Any illness in an animal under observation should be reported immediately to the local health department.

The following are recommendations for owners of livestock exposed to rabid animals:

(1) If the animal is slaughtered within 7 days of being bitten, its tissues may be eaten without risk of infection, provided that liberal portions of the exposed area are discarded. Federal guidelines for meat inspectors require that any animal known to have been exposed to rabies within 8 months be rejected for slaughter.

(2) Neither tissues nor milk from a rabid animal should be used for human or animal consumption.[17] Pasteurization temperatures will inactivate rabies virus, therefore, drinking pasteurized milk or eating cooked meat does not constitute a rabies exposure.

(3) Having more than one rabid animal in a herd or having herbivore-to-herbivore transmission is uncommon; therefore, restricting the rest of the herd if a single animal has been exposed to or infected by rabies might not be necessary.

(c) OTHER ANIMALS. Other mammals bitten by a rabid animal should be euthanized immediately. Animals maintained in USDA licensed research facilities or accredited zoological parks should be evaluated on a case-by-case basis.

6. MANAGEMENT OF ANIMALS THAT BITE HUMANS:

(a) DOGS, CATS, AND FERRETS. Rabies virus may be excreted in the saliva of infected dogs, cats, and ferrets during illness and/or for only a few days prior to illness or death.[18-20] A healthy dog, cat, or ferret that bites a person should be confined and observed daily for 10 days.[21] During the observation period, administration of rabies vaccine to the animal is not recommended to avoid confusing signs of rabies with possible side effects of vaccine administration. Animals should be evaluated by a veterinarian at the first sign of illness during confinement. Any illness in the animal should be reported immediately to the local health department. If signs suggestive of rabies develop, the animal should be euthanized and the head shipped for testing as described in Part I.A.7. Any stray or unwanted dog, cat, or ferret that bites a person may be euthanized immediately and the head submitted for rabies examination.

(b) OTHER BITING ANIMALS. Other biting animals which might have exposed a person to rabies should be reported immediately to the local health department. Management of animals other than dogs, cats, and ferrets depends on the species, the circumstances of the bite, the epidemiology of rabies in the area, the biting animal's history, current health status, and potential for exposure to rabies. Prior vaccination of these animals may not preclude the necessity for euthanasia and testing.

C. PREVENTION AND CONTROL METHODS RELATED TO WILDLIFE: The public should be warned not to handle or feed wild mammals. Wild mammals and hybrids that bite or otherwise expose persons, pets, or livestock should be considered for euthanasia and rabies examination. A person bitten by any wild mammal should immediately report the incident to a physician who can evaluate the need for antirabies treatment (See current rabies prophylaxis recommendations of the ACIP[2]). State regulated wildlife rehabilitators may play a role in a comprehensive rabies control program. Minimum standards for persons who rehabilitate wild mammals should include rabies vaccination, appropriate training and continuing education. Translocation of infected wildlife has contributed to the spread of rabies;[22,23] therefore, the translocation of known terrestrial rabies reservoir species should be prohibited.

1. TERRESTRIAL MAMMALS: The use of licensed oral vaccines for the mass vaccination of free-ranging wildlife should be considered in selected situations, with the approval of the state agency responsible for animal rabies control.[5] The distribution of oral rabies vaccine should be based on scientific assessments of the target species and followed by timely and appropriate analysis of surveillance data; such results should be provided to all stakeholders. In addition, parenteral vaccination (trap-vaccinate-release) of wildlife rabies reservoirs may be integrated into coordinated oral rabies vaccination programs to enhance their effectiveness. Continuous and persistent programs for trapping or poisoning wildlife are not effective in reducing wildlife rabies reservoirs on a statewide basis. However, limited population control in high-contact areas (e.g., picnic grounds, camps, suburban areas) may be indicated for the removal of selected high-risk species of

wildlife.[5] State agriculture, public health, and wildlife agencies should be consulted for planning, coordination, and evaluation of vaccination or population-reduction programs.

2. **BATS:** Indigenous rabid bats have been reported from every state except Hawaii, and have caused rabies in at least 40 humans in the United States.[24-28] Bats should be excluded from houses, public buildings, and adjacent structures to prevent direct association with humans.[29,30] Such structures should then be made bat-proof by sealing entrances used by bats. Controlling rabies in bats through programs designed to reduce bat populations is neither feasible nor desirable.

Part II: Recommendations for Parenteral Rabies Vaccination Procedures

A. VACCINE ADMINISTRATION: All animal rabies vaccines should be restricted to use by, or under the direct supervision of a veterinarian,[31] except as recommended in Part I.B.1. All vaccines must be administered in accordance with the specifications of the product label or package insert.

B. VACCINE SELECTION: Part III lists all vaccines licensed by USDA and marketed in the United States at the time of publication. New vaccine approvals or changes in label specifications made subsequent to publication should be considered as part of this list. Any of the listed vaccines can be used for revaccination, even if the product is not the same brand previously administered. Vaccines used in state and local rabies control programs should have a 3-year duration of immunity. This constitutes the most effective method of increasing the proportion of immunized dogs and cats in any population.[32] There are no laboratory or epidemiologic data to support the annual or biennial administration of 3-year vaccines following the initial series.

C. ADVERSE EVENTS: Currently, no epidemiologic association exists between a particular licensed vaccine product and adverse events including vaccine failure.[33,34] Adverse events should be reported to the vaccine manufacturer and to the USDA, Animal and Plant Health Inspection Service, Center for Veterinary Biologics (www.aphis.usda.gov/vs/cvb/ic/adverseeventreport.htm, by telephone at 800-752-6255, or by e-mail to CVB@usda.gov).

D. WILDLIFE AND HYBRID ANIMAL VACCINATION: The safety and efficacy of parenteral rabies vaccination of wildlife and hybrids (the offspring of wild animals crossbred to domestic animals) have not been established, and no rabies vaccines are licensed for these animals. Parenteral vaccination (trap-vaccinate-release) of wildlife rabies reservoirs may be integrated into coordinated oral rabies vaccination programs as described in Part I, C.1. to enhance their effectiveness. Zoos or research institutions may establish vaccination programs, which attempt to protect valuable animals, but these should not replace appropriate public health activities that protect humans.[9]

E. ACCIDENTAL HUMAN EXPOSURE TO VACCINE: Human exposure to parenteral animal rabies vaccines listed in Part III does not constitute a risk for rabies infection. However, human exposure to vaccinia-vectored oral rabies vaccines should be reported to state health officials.[35]

F. RABIES CERTIFICATE: All agencies and veterinarians should use the NASPHV Form #51, "Rabies Vaccination Certificate," which can be obtained from vaccine manufacturers or the NASPHV website (www.nasphv.org). The form must be completed in full and signed by the administering or supervising veterinarian. Computer-generated forms containing the same information are acceptable.

Part III: Rabies Vaccines Licensed and Marketed in the U.S., 2005

Product Name	Produced by	Marketed by	For Use In	Dosage	Age at Primary Vaccination[a]	Booster Recommended	Route of Inoculation
A) MONOVALENT (Inactivated)							
DEFENSOR 1	Pfizer, Incorporated License No. 189	Pfizer, Incorporated	Dogs Cats	1 ml 1 ml	3 months[b] 3 months	Annually Annually	IM[c] or SC[d] SC
DEFENSOR 3	Pfizer, Incorporated License No. 189	Pfizer, Incorporated	Dogs Cats Sheep Cattle	1 ml 1 ml 2 ml 2 ml	3 months 3 months 3 months 3 months	1 year later & triennially 1 year later & triennially Annually Annually	IM or SC SC IM IM
RABDOMUN	Pfizer, Incorporated License No. 189	Schering-Plough	Dogs Cats Sheep Cattle	1 ml 1 ml 2 ml 2 ml	3 months 3 months 3 months 3 months	1 year later & triennially 1 year later & triennially Annually Annually	IM or SC SC IM IM
RABDOMUN 1	Pfizer, Incorporated License No. 189	Schering-Plough	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SC SC
RABVAC 1	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	IM or SC IM or SC
RABVAC 3	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Dogs Cats Horses	1 ml 1 ml 2 ml	3 months 3 months 3 months	1 year later & triennially 1 year later & triennially Annually	IM or SC IM or SC IM

Product Name	Produced by	Marketed by	For Use In	Dosage	Age at Primary Vaccination[a]	Booster Recommended	Route of Inoculation
A) MONOVALENT (Inactivated) continued							
RABVAC 3 TF	Fort Dodge Animal Health License No. 112	Fort Dodge Animal Health	Dogs Cats Horses	1 ml 1 ml 2 ml	3 months 3 months 3 months	1 year later & triennially 1 year later & triennially Annually	IM or SC IM or SC IM
PRORAB-1	Intervet, Incorporated License No. 286	Intervet, Incorporated	Dogs Cats Sheep	1 ml 1 ml 2 ml	3 months 3 months 3 months	Annually Annually Annually	IM or SC IM or SC IM
PRORAB-3F	Intervet, Incorporated License No. 286	Intervet, Incorporated	Cats	1 ml	3 months	1 year later & triennially	IM or SC
IMRAB 3	Merial, Incorporated License No. 298	Merial, Incorporated	Dogs Cats Sheep Cattle Horses Ferrets	1 ml 1 ml 2 ml 2 ml 2 ml 1 ml	3 months 3 months 3 months 3 months 3 months 3 months	1 year later & triennially 1 year later & triennially 1 year later & triennially Annually Annually Annually	IM or SC IM or SC IM or SC IM or SC IM or SC SC
IMRAB 3 TF	Merial, Incorporated License No. 298	Merial, Incorporated	Dogs Cats Ferrets	1 ml 1 ml 1 ml	3 months 3 months 3 months	1 year later & triennially 1 year later & triennially Annually	IM or SC IM or SC SC
IMRAB Large Animal	Merial, Incorporated License No. 298	Merial, Incorporated	Cattle Horses Sheep	2 ml 2 ml 2 ml	3 months 3 months 3 months	Annually Annually 1 year later & triennially	IM or SC IM or SC IM or SC
IMRAB 1	Merial, Incorporated License No. 298	Merial, Incorporated	Dogs Cats	1 ml 1 ml	3 months 3 months	Annually Annually	SC SC
B) MONOVALENT (Rabies glycoprotein, live canary pox vector)							
PUREVAX Feline Rabies	Merial, Incorporated License No. 298	Merial, Incorporated	Cats	1ml	8 weeks	Annually	SC
C) COMBINATION (Inactivated rabies)							
Equine POTOMAVAC + IMRAB	Merial, Incorporated License No. 298	Merial, Incorporated	Horses	1 ml	3 months	Annually	IM
MYSTIQUE II	Intervet, Incorporated License No. 286	Intervet, Incorporated	Horses	1 ml	3 months	Annually	IM
D) COMBINATION (Rabies glycoprotein, live canary pox vector)							
PUREVAX Feline 3/ Rabies	Merial, Incorporated License No. 298	Merial, Incorporated	Cats	1ml	8 weeks	Annually	SC
PUREVAX Feline 4/ Rabies	Merial, Incorporated License No. 298	Merial, Incorporated	Cats	1ml	8 weeks	Annually	SC
E) ORAL (Rabies glycoprotein, live vaccinia vector) - RESTRICTED TO USE IN STATE AND FEDERAL RABIES CONTROL PROGRAMS							
RABORAL V-RG	Merial, Incorporated License No. 298	Merial, Incorporated	Raccoons Coyotes	N/A	N/A	As determined by local authorities	Oral

a. Minimum age (or older) and revaccinated one year later.
b. One month = 28 days
c. Intramuscularly
d. Subcutaneously

REFERENCES

1. Rabies. In: Chin J, ed. *Control of Communicable Diseases Manual, 17th ed*. Washington, DC: American Public Health Association, 2000:411-419.
2. CDC. Human rabies prevention-United States, 1999. Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 1999; 48:(No. RR-1).
3. Krebs JW, et al. Rabies Surveillance in the United States during 2003. *J Am Vet Med Assoc* 2004
4. McQuiston J, et al. Epidemiologic characteristics of rabies virus variants in dogs and cats in the United States, 1999. *J Am Vet Med Assoc* 2001; 218:1939-1942.
5. Hanlon CA, Childs JE, Nettles VF, et al. Recommendations of the Working Group on Rabies, Article III: Rabies in wildlife. *J Am Vet Med Assoc* 1999; 215:1612-1618.
6. Hanlon CA, Smith, JS, Anderson, GR, et al. Recommendations of the Working Group on Rabies, Article II: Laboratory diagnosis of rabies. *J Am Vet Med Assoc* 1999; 215:1444-1446.
7. 2000 Report of the AVMA Panel on Euthanasia. *J Am Vet Med Assoc* 2001; 218:5,669-696.
8. Tizard I, Ni Y. Use of serologic testing to assess immune status of companion animals. *J Am Vet Med Assoc* 1998; 213:54-60.
9. Bender J, Schulman S, et al. Reports of zoonotic disease outbreaks associated with animal exhibits and availability of recommendations for preventing zoonotic disease transmission from animals to people in such settings. *J Am Vet Med Assoc* 2004; 224:1105-1109.
10. Wild Animals as Pets. In: Directory and resource manual. Schaumburg, IL: American Veterinary Medical Association 2002:126.
11. Position on Canine Hybrids. In: Directory and resource manual. Schaumburg, IL: American Veterinary Medical Association 2002:88-89.
12. Siino BS. Crossing the line. American Society for the Prevention of Cruelty to Animals Animal Watch 2000; Winter:22-29.
13. Jay MT, Reilly KF, DeBess EE, Haynes EH, Bader DR, Barrett LR. Rabies in a vaccinated wolf-dog hybrid. *J Am Vet Med Assoc* 1994; 205:1729-1732.
14. CDC. An imported case of rabies in an immunized dog. *MMWR* 1987, 36:94-96,101.
15. CDC. Imported dog and cat rabies – New Hampshire, California. *MMWR* 1988, 37:559-560.
16. Hanlon CA, Niezgoda MN, Rupprecht CE. Postexposure prophylaxis for prevention of rabies in dogs. *Am J Vet Res* 2002; 63:1096-1100.
17. CDC. Mass treatment of humans who drank unpasteurized milk from rabid cows-Massachusetts, 1996-1998. *MMWR* 1999; 48:228-229.
18. Vaughn JB, Gerhardt P, Paterson J. Excretion of street rabies virus in saliva of cats. *J Am Med Assoc* 1963, 184:705.
19. Vaughn JB, Gerhardt P, Newell KW. Excretion of street rabies virus in saliva of dogs. *J Am Med Assoc* 1965, 193:363-368.
20. Niezgoda M, Briggs DJ, Shaddock J, Rupprecht CE. Viral excretion in domestic ferrets (Mustela putorius furo) inoculated with a raccoon rabies isolate. *Am J Vet Res* 1998, 59:1629-1632.
21. Tepsumethanon V, Lumlertdacha B, Mitmoonpitak C, Sitprija V, Meslin FX, Wilde H. Survival of naturally infected rabid dogs and cats. Clin Infect Dis. 2004; 39:278-80.
22. Jenkins SR, Perry BD, Winkler WG. Ecology and epidemiology of raccoon rabies. *Rev Inf Dis* 1988; 10:Suppl 4:S620-S625.
23. CDC. Translocation of Coyote Rabies – Florida, 1994. *MMWR* 44:580-587.
24. Messenger SL, Smith JS, Rupprecht CE. Emerging epidemiology of bat-associated cryptic cases of rabies in humans in the United States. *Clin Inf Dis* 2002; 35:738-747.
25. CDC. Human Rabies - California, 2002. *MMWR* 51:686-688.
26. CDC. Human Rabies - Tennessee, 2002. *MMWR* 51:828-829.
27. CDC. Human Rabies - Iowa, 2002. *MMWR* 52:47-48.
28. CDC. Human Death Associated with Bat Rabies - California, 2003. MMWR 53:33-35.
29. Frantz SC, Trimarchi CV. Bats in human dwellings: health concerns and management In: Decker DF, ed. Proceedings of the first eastern wildlife damage control conference. Ithaca, NY: Cornell University, 1983: 299-308.
30. Greenhall AM. House bat management. US Fish and Wildlife Service, Resource Publication 143, 1982.
31. Model rabies control ordinance. In: Directory and resource manual. Schaumburg, IL: American Veterinary Medical Association, 2002:114-116.
32. Bunn TO. Canine and feline vaccines, past and present. In Baer GM, ed. *The Natural History of Rabies, 2nd ed*. Boca Raton, FL: CRC Press, 1991:415-425.
33. Gobar GM, Kass PH. World Wide Web-based survey of vaccination practices, postvaccinal reactions, and vaccine site-associated sarcomas in cats, *J Am Vet Med Assoc* 2002; 220:1477-1482
34. Macy DW, Hendrick MJ. The potential role of inflammation in the development of postvaccinal sarcomas in cats. *Vet Clin North Am Small Anim Pract* 1996; 26:103-109.
35. Rupprecht CE, Blass L, Smith K et al. Human infection due to recombinant vaccinia-rabies glycoprotein virus. *N Engl J Med* 2001; 345:582-586.